

REMARKS

Reconsideration of the application is respectfully requested. Claims 35, 36, 38, 40, 42-44, 47, 51, 52, 54, and 60 have been amended. Claims 53 and 64 have been canceled, without prejudice or disclaimer. Claims 35-38, 40-47, 49, 51, 52, 54, 55, 57, 58, and 60-63 are pending in the application.

Claims 35, 36, 38, 40, 42, 44, 47, and 51 have been amended to consistently refer to the "first gas adsorbent material" and "second gas adsorbent material." Claim 35 has also been amended to recite that "gas pressure changes are immediately translated between the first and second gas adsorbent materials" when the claimed method is in use. Support for this amendment is found in the specification at, for example, p. 3, lines 29-33. Claim 43 has been amended to replace "the other fluid stream" with --said another fluid-- to correspond with the recitation of "another fluid" in claim 42, from which claim 43 depends. Claim 52 has been amended to incorporate the subject matter of canceled claim 53. Support for this amendment is also found in original claim 20. Claim 54 has been amended to depend from claim 52 instead of claim 53 (now canceled). Claim 60 has been amended to consistently refer to the "first adsorbent material" and "second adsorbent material," and has also been amended to recite "a chamber having a first portion comprising a first adsorbent material and a second portion comprising a second adsorbent material, wherein the portions are connected so as to always allow continuous gaseous communication therebetween, with the portions being relatively thermally isolated from each other." Support for this amendment is found in original claim 19.

No new matter has been added.

Claim Objections

The Examiner has objected to claims 35, 36, 38, 40, 42, 44, and 52 as requiring consistent language with respect to the first and second gas adsorbent materials. Claims 35, 36, 38, 40, 42, 44, 47, 51, and 60 have been amended to provide more consistent terminology. Therefore, this objection has been obviated.

Rejections Under 35 U.S.C. §112, Second Paragraph

Claim 41 has been rejected under 35 U.S.C. §112, second paragraph because the Examiner alleges that this claim could depend from claim 40, claim 38, or both. Applicant respectfully submits that claim 41 clearly depends from claim 38 only. This is evidenced by the Second Preliminary Amendment filed October 31, 2007 (*see* p. 3), in which Applicant amended claim 41 to depend from claim 38 alone. No further amendment is required. Therefore, Applicant respectfully requests that this rejection be withdrawn.

Claim 43 has been rejected under 35 U.S.C. §112, second paragraph because the Examiner states that this claim lacks sufficient antecedent basis for the phrase “the other fluid stream.” Claim 43 has been amended to replace “the other fluid stream” with --said another fluid-- to more clearly correspond with the recitation of “another fluid” in claim 42, from which claim 43 depends. Therefore, Applicant respectfully requests that this rejection be withdrawn.

Obviousness-Type Double Patenting Rejections

Claims 35-38, 40, 42, 43, 45-47, 49, 52-54, 58, 60, 61, 63, and 64 have been provisionally rejected for obviousness-type double patenting over claims 1, 2, 6, 8-13, 15-18, 20, and 21 of U.S. Patent Application No. 12/530,322. The Examiner states that although the conflicting claims are not identical, they are not patentably distinct.

Regarding the rejection of claims 53 and 64, this rejection is moot because these claims have been canceled, without prejudice or disclaimer. Regarding the remaining rejected claims, Applicant respectfully requests that this rejection be held in abeyance because none of the conflicting claims have yet been allowed or granted in an issued patent. Applicant notes that this request constitutes a full and complete response to the Examiner’s provisional rejections, and that once all of the rejections other than this obviousness-type double patenting rejection has been overcome, the instant application should be allowed to pass to issue without a terminal disclaimer. *See* MPEP §804(I)(B).

Rejections Under 35 U.S.C. §102(b)

Claims 35-38, 40, 45, 46, and 50 have been rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 5,025,635 ("Rockenfeller"). The rejection is traversed, and reconsideration is respectfully requested.

Rockenfeller is directed to a chemisorption system that utilizes chemical reactions (ligand formation) between gas and inorganic salts. Such chemicals are toxic and harmful to the environment. One of ordinary skill in the art would readily understand that a chemisorption system cannot be considered to be a desorption system, such as that called for in the pending claims, particularly because the binding energy of a chemisorption system is conventionally considered to be higher than that of an adsorption/desorption system.

Additionally, the cooling effect of the Rockenfeller system is due to evaporation (i.e., a liquid-gas transformation), whereas the cooling effect of the presently claimed invention is due to gas adsorption/desorption. In other words, there is no transformation of state, as both adsorption and desorption occur as a gas.

It is further noted that Rockenfeller requires the use of a valve 34 between the condenser and evaporator units. The Rockenfeller system has different pressures at the regenerator and cooler, which requires the use of the valve. That is, Rockenfeller's valve creates adsorption and desorption phase cycles and prevents a single continuous adsorption/desorption phase. Thus, Rockenfeller's system is in direct contrast with the claims of the present application, in which no valve is required to regulate the pressure changes because the first and second gas adsorbent materials are in continuous gaseous communication, thus allowing any pressure changes to be immediately translated between the first and second gas adsorbent materials. Since a valve is not present or needed in the claimed invention, the pressures in the first and second chamber portions automatically equilibrate.

Also, the way in which Rockenfeller's system functions is fundamentally different to that disclosed in the present application. Specifically, Rockenfeller's heating of the system causes desorption in the adsorber. However, in the present application, cooling of the regenerator causes desorption in the desorber and thus cooling of the desorber.

For at least the foregoing reasons, claims 35-38, 40, 45, 46, and 50 are not anticipated by Rockenfeller. Therefore, Applicant respectfully requests that this rejection be withdrawn.

* * * * *

Claims 60-64 have been rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent No. 7,143,589 ("Smith '589"). The rejection is traversed, and reconsideration is respectfully requested.

Smith '589 is directed to an evaporative cooling system having a membrane that is used to create a pressure differential which may be likened to the pressure difference created by a valve in a compression cycle. This pressure differential is created by Smith '589's membrane 816 (i.e., the second, impermeable side of the desiccant sheets) having an aperture 814 therein, through which the refrigerant and coolant flow. In contrast, claims 60-64 call for gas pressure changes that are immediately translated between the first and second gas adsorbent materials because they are in continuous gaseous communication – i.e., there is no barrier between them, as in Smith '589.

Given the foregoing, claims 60-64 are not anticipated by Smith '589. Therefore, Applicant respectfully requests that this rejection be withdrawn.

Rejections Under 35 U.S.C. §103

Claims 44, 49, and 51 have been rejected under 35 U.S.C. §103(a) as obvious over Rockenfeller. The rejection is traversed, and reconsideration is respectfully requested.

As discussed above, Rockenfeller fails to teach or suggest the immediate translation of gas pressure changes between the first and second gas adsorbent materials, and instead requires the use of a valve 34 between the condenser and evaporator units. This prevents the immediate translation of gas pressure changes. As a valve is not present (or needed) in the present application, the pressures in the first and second chamber portions automatically equilibrate. In

light of this deficiency in Rockenfeller's disclosure, one of ordinary skill would not have arrived at the claimed invention through mere routine optimization of Rockenfeller's process.

Given the foregoing, claims 44, 49, and 51 are not obvious over Rockenfeller. Therefore, Applicant respectfully requests that this rejection be withdrawn.

* * * * *

Claims 41-43 and 57 have been rejected under 35 U.S.C. §103(a) as obvious over Rockenfeller in view of U.S. Patent No. 6,237,357 ("Hirao"). The rejection is traversed, and reconsideration is respectfully requested.

As discussed above, Rockenfeller does not teach or suggest the immediate translation of gas pressure changes between the first and second gas adsorbent materials, and instead requires the use of a valve 34 between the condenser and evaporator units. Hirao fails to cure the deficiencies of Rockenfeller.

Hirao discloses a conventional compression-cycle heat pump to be utilized for the air-conditioning unit in modern electric or hybrid vehicles. The cyclical nature of this conventional heat pump requires the use of a four-way valve 33, which prevents the immediate translation of gas pressure changes. It is inconsequential as to whether Hirao teaches using a second material to cool another fluid, because neither Rockenfeller nor Hirao teaches or suggests the immediate translation of gas pressure changes as called for in the pending claims.

Given the foregoing, claims 41-43 and 57 are not obvious over Rockenfeller and Hirao. Therefore, Applicant respectfully requests that this rejection be withdrawn.

* * * * *

Claims 47 and 58 have been rejected under 35 U.S.C. §103(a) as obvious over Rockenfeller in view of U.S. Patent No. 5,522,228 ("Guillot"). The rejection is traversed, and reconsideration is respectfully requested.

As discussed above, Rockenfeller does not teach or suggest the immediate translation of gas pressure changes between the first and second gas adsorbent materials, and instead requires

the use of a valve 34 between the condenser and evaporator units. Guillot fails to cure the deficiencies of Rockenfeller.

Guillot discloses a regenerator and desorber having different pressures, and a valve therebetween. Cooling is achieved in Guillot due to the pressure difference between the regenerator and desorber. There is nothing in Guillot to suggest removing such a valve and having gas pressure changes immediately translated between the first and second gas adsorbent materials so that they are in continuous gaseous communication thus equilibrating the gas pressures between the first and second gas adsorbent materials. It is inconsequential as to whether Guillot teaches the use of zeolite and activated carbon as the first and second adsorbent materials, because neither Rockenfeller nor Guillot teaches or suggests the immediate translation of gas pressure changes between first and second gas adsorbent materials as called for in the pending claims.

Given the foregoing, claims 47 and 58 are not obvious over Rockenfeller and Guillot. Therefore, Applicant respectfully requests that this rejection be withdrawn.

* * * * *

Claim 55 has been rejected under 35 U.S.C. §103(a) as obvious over Rockenfeller in view of U.S. Patent No. 6,701,725 ("Smith '724"). The rejection is traversed, and reconsideration is respectfully requested.

As discussed above, Rockenfeller does not teach or suggest the immediate translation of gas pressure changes between the first and second gas adsorbent materials, and instead requires the use of a valve 34 between the condenser and evaporator units. Smith '724 fails to cure the deficiencies of Rockenfeller.

Smith '724 discloses evaporative cooling of a refrigerant which is absorbed into another liquid. There are different pressures in different parts of the device, and these pressures vary with time. There is simply no adsorption and desorption cooling involved in Smith '724's system. Further, the different pressures in different parts of the device indicates that the immediate translation of gas pressure changes between the first and second gas adsorbent materials does not occur, as is required by the claims of the present application. *See, e.g.*, Smith '724 at col. 10,

lines 1-10. Accordingly, neither Rockenfeller nor Smith '724 teaches or suggests the immediate translation of gas pressure changes between first and second gas adsorbent materials as called for in the pending claims.

Given the foregoing, claim 55 is not obvious over Rockenfeller and Smith '724. Therefore, Applicant respectfully requests that this rejection be withdrawn.

Conclusion

In view of the above amendments and remarks, it is respectfully requested that the application be reconsidered and that all pending claims be allowed and the case passed to issue.

If there are any other issues remaining, which the Examiner believes could be resolved through either a Supplemental Response or an Examiner's Amendment, the Examiner is respectfully requested to contact the undersigned at the telephone number indicated below.

Dated: August 23, 2011

Respectfully submitted,

By Dianna G. El Hioum
Dianna G. El Hioum

Registration No.: 52,949
MERCHANT & GOULD P.C.
P.O. Box 2903
Minneapolis, Minnesota 55402-0903
(612) 332-5300
(612) 332-9081 (Fax)
Attorneys/Agents For Applicant

